

19 MAY 2006

MEMORANDUM FOR CHIEF, MISSISSIPPI VALLEY DIVISION REGIONAL
INTEGRATION TEAM (Attn: John Lucyshyn)

SUBJECT: Wood River Levee System, Madison County, Illinois, Final General Reevaluation
Report and Environmental Assessment (March 2006) – Documentation of Review Findings

1. This memorandum forwards the documentation of review findings, draft final Report of the Chief of Engineers and report summary for the subject project proposal. The policy compliance review team has no remaining concerns related to this phase of project formulation and development.
2. Office of Water Project Review consideration of subject general reevaluation report and environmental assessment is complete. Questions concerning the HQUSACE policy compliance review of this project proposal may be discussed with review manager, Cynthia Jester, 202-761-4701.

Encl



ROBYN S. COLOSIMO, P.E.

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DOCUMENTATION OF REVIEW FINDINGS

WOOD RIVER LEVEE SYSTEM MADISON COUNTY, ILLINOIS

FINAL GENERAL REEVALUATION REPORT and ENVIRONMENTAL ASSESSMENT

MARCH 2006

DOCUMENTATION OF REVIEW FINDINGS

WOOD RIVER LEVEE SYSTEM MADISON COUNTY, ILLINOIS

GENERAL REEVALUATION REPORT and ENVIRONMENTAL ASSESSMENT (Report dated March 2006)

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DOCUMENTATION OF REVIEW FINDINGS

WOOD RIVER LEVEE SYSTEM MADISON COUNTY, ILLINOIS

FINAL GENERAL REEVALUATION REPORT and ENVIRONMENTAL ASSESSMENT (Report dated MARCH 2006)

1. BACKGROUND. The Wood River Levee System was authorized by Congress in 1938. But much of the construction took place in the 1950s and 1960s. It was designed for a flood with a 0.0014 probability of exceedance (700-year flood). It protects 13,700 acres of bottomland on the east bank of the Mississippi River, across the river from St. Louis. The system provides about 21 miles of main line levee, protecting: 8,640 homes, 1,020 commercial structures, and 542 industries. Structures in the protected area are valued at \$1.5 billion. The flood of record, in 1993, a 175-year event, uncovered several problems: underseepage failures; gravity drain failures; closure structure leaks; and obsolete pumping station equipment. A study was authorized by Congress in 1997 to evaluate reconstruction of facilities to return the overall levee project to its original degree of protection. The report recommends reconstruction or repairs to pumping stations, gravity drains, and closure structures under new authority at a cost of about \$16,730,000. The report also recommends construction of additional relief wells and redevelopment of existing relief wells to correct design deficiencies under the original project authority at a cost of about \$12,900,000. Total first costs are estimated at \$29,630,000 and the overall BCR is 3.2 to 1. Cost sharing is 65% Federal-35% non-Federal.

a. Project Description. The Wood River Flood Protection Project provided for raising and enlarging 20.8 miles of existing levee, construction of gravity drainage structures, closure structures at railroad and highway crossings, alterations to existing or construction of new pump stations, surfacing of service road on levee crown, seepage control measures, and construction of a low-water dam at the mouth of Wood River. The project as intended provides protection against a 52 foot Mississippi River stage on the St. Louis Gage, which has less than a 0.002 probability of exceedance (greater than 500 year flood). The area protected extends from the city of Alton, Illinois at the northwest end to the Cahokia Creek Diversion Channel at the southeast. This project protects the industrial and urban areas of East Alton, Harford, Roxana and Wood River. In addition to providing protection to the land side area, the levee structure is a part of the containment features for the Melvin Price Locks and Dam Project. Modifications made to Lock and Dam 26 that resulted in construction of the Melvin Price Lock and Dam raised the height of the navigation pool on an approximate 2 mile stretch of the existing

levee increasing seepage in this levee stretch and necessitating the construction of a new Pump Station at East Alton. Additionally, the Wood River system provides upstream protection to the adjoining East St. Louis Levee System that extends from the Cahokia Diversion Canal to Dupo.

b. Problems and Opportunities. The potential for levee failure is a major problem. As time continues to pass without a comprehensive reconstruction being undertaken for the Wood River Levee System the probability that the project will fail continues to increase. The Wood River Drainage and Levee District has remained a good steward of this Federal infrastructure. They have historically and continue to provide routine operation and maintenance of the system and take action to repair as circumstances require in accordance with the agreements under which they assumed sponsorship responsibility. However, as all parts of this integral system continue to degrade over time the chances of multiple failures occurring simultaneously continue to increase. The opportunity exists to proactively take action to reconstruct the system now in order to prevent a future catastrophe caused by system deterioration. Levee failure could cost at current estimates approximately \$1.5 billion in economic damages, and potentially another \$2 billion in environmental damages.

c. Plan Formulation Rationale. Three basic alternative plans (No Action alternative, reconstruction alternative and replacement alternative) were used to guide the alternative development process for this study. Under the No Action alternative, the Levee District would continue to perform its operation and maintenance responsibilities and maintain their standing in the P.L. 84-99 program, but no Federal action outside of the P.L. 84-99 program would be taken. The reconstruction alternative sought to identify actions that could be taken to correct system deficiencies through a variety of specific approaches that would be equal in performance to replacement. The replacement alternative sought to identify actions that could be taken to correct system deficiencies through replacement of system components. In this manner each of the system's features (Corrugated Metal Pipe (CPM) Gravity Drains, Sluice Gates and Flap Gates; Gatewell Structures, Closure Structures, Pump Stations and Underseepage Control) were analyzed and evaluated.

2. REPORT RECOMMENDATION. The recommended plan to restore the Wood River levee system to its original degree of protection includes measures that address two components Design/Construction Deficiency Correction and Reconstruction. The recommended plan includes construction of certain measures to address design and construction deficiencies that can be implemented under the existing project authorization. The design and construction correction measures include replacement of 163 existing relief wells and installation of 60 new relief wells. The plan also includes recommendations for reconstruction measures to addresses the long-term degradation of materials, systems and components of the existing project that have exceeded their expected service life. Additional Congressional authorization is required to implement the reconstruction measures, which include construction or replacement work at 38 gravity dams, 26 closure structures (including abandonment of 3 railroad closure structures that are no longer used), and 7 pump stations. The estimated total project cost,

based on October 2005 price levels is \$29,630,000, all for the purpose of flood damage reduction. Of this amount, \$12,900,000 is for the design and construction deficiency correction measures that will be implemented when funding is provided. The cost sharing provisions of Section 103 of the Water Resources Act (WRDA) of 1986, as amended by Section 202 of WRDA 1996, will be applied to the design and construction deficiency correction measures,, resulting in an estimated Federal share of \$8,400,000 and an estimated non-Federal share of \$4,500,000. The estimated first cost of the reconstruction measure is \$16,730,000. In accordance with Section 103 of WRDA 1986, as amended, the estimated Federal share of \$10,900,000 and an estimated non-Federal share of \$5,830,000. Total expected annual costs, based on a discount rate of 5.125 percent and a 50-year period of analysis are estimated to be \$2,035,000 including \$252,000 for operation and maintenance, repair, rehabilitation, and replacement (OMRRR&R). The expected annual benefits are estimated to be \$6,547,000, with net annual benefits of \$4,513,000. The benefit-to-cost ratio is 3.2 to 1 for the overall project.

3. COMMENTS - ALTERNATIVE FORMULATION BRIEFING (AFB). The items below discuss the concerns which were raised during the policy review of the AFB material. For each review concern there is documentation of the comment, the district's response, AFB discussions, the required action for resolution, the compliance action taken in the draft LRR, HQ analysis regarding its resolution, and any further actions required to resolve outstanding concerns in the final LRR. The comment number in the AFB-PGM is shown in brackets.

a. Project Construction History. [Comment 2.a.] The text discussions on the existing project do not clearly identify when the various project features were constructed and what entities have undertaken repair and rehabilitation actions in the past. The project authority dates from 1938 according to paragraph 4.1, however it is not clear when the construction was actually started. Table 1 of Appendix A indicates that the ages of the CMP gravity drains vary, reflecting construction between 1948 and 1961. Paragraph 5.1.3.5 indicates that the relief wells were installed in the 1950's and 1960's. Were all the relief wells installed by the Government during construction or were some installed subsequently as problems were identified? A table should be provided as a clear and concise reference to show the age of the various features and their likely need for reconstruction due to age.

District Response: In 1938 a local levee system was already in place. Action taken by the Federal government in the 1950's and early 1960's, as a result of the 1938 act, raised and reinforced portions of this existing levee, added relief wells, added or modified gravity drains, added or modified closure structures and added pump stations. The government installed all relief wells during construction of the project. These actions were taken under various construction contracts over several years. Information contained in General Design Memorandum No. 4 was utilized to create the following table.

Item	QTY	Completed	Age in Years	Reconstruction Required
Gravity Drains				
Upper Wood River	4	1952	51	Yes
East & West Fork	8	1950	53	Yes
Lower Wood River	24	1948-1961	42+	Yes
Closure Structures				
Upper Wood River	9	3 -1961 5-1982 1-1992	42 21 11	Yes No No
East & West Fork	2	1964	39	Yes
Lower Wood River	17	6-1959 6-1960 2-1961 3-1964	44 43 42 39	Yes Yes Yes Yes
Pump Stations with Gravity Drains				
East Alton No.2		1950	53	Yes
Homegarden		1953	50	Yes
Lakeside		1953	50	Yes
Wood River		1953	50	Yes
Hawthorne		1955	48	Yes
Rand		1957	46	Yes
East Alton No.1		1988	15	No
Relief Wells				
Upper Wood River	103	1954	49	Yes
	12	1964	39	Yes
East & West Fork	0			
Lower Wood River	45	1964	39	Yes

HQ Analysis: The table provided in response to the comment is helpful and demonstrates the correlation between the age of features and the need for reconstruction. Some further clarification would be helpful to resolve discrepancies between the text on page 5 of the AFB and the table on the number of features included in the project. The table provides age data for 36 gravity drains, 28 closure structures and 160 relief wells. The text on page 5 indicates there are 41 gravity drains, 26 closure structures, and 164 relief wells. The values should be reconciled and the completion dates and age provided

for the final list of features, which is included in the report. The discrepancies may be partly attributable to features that have already been rehabilitated or replaced.

Discussion: Concur.

Required Action: The district will include information from the response in the draft report. In addition, the district will review this information to ensure consistency with other information presented in the report and explain any noted differences.

Compliance Action: Construction history table has been included in paragraph 5.1.3 of the draft report and numbers have been reconciled throughout the document.

HQ Assessment: The concern is resolved by the text changes noted in the response.

b. Maintenance History. [Comment 2.b.] The ITR comments (on page 3) note that there is need for clarification of past O&M activities to explain whether they have been sufficient and whether there was a timely response to requirements of periodic inspection reports. The report does not appear to provide much clarification beyond the language cited in the comment. The text in paragraph 5.1.2.2 notes that there were four years out of eighteen in which the inspection reports were not satisfactory for the levee and it would be helpful to know what issues were raised and how they were addressed. Although cost information is provided on the most recent 10 years and inspections were evaluated back to 1985, there is a lack of information on the long-term maintenance history and expenditures except for P.L. 84-99 assistance. Further information should be provided to describe the extent and cost of past maintenance efforts in order to demonstrate a long-term history of adequate maintenance.

District Response: Data past 15 years is not readily available. However, if 15 years ago the levee system was satisfactory and the pumping plants were outstanding then is prior information really pertinent? The system was in compliance then and is in compliance today. The Wood River Drainage and Levee District have continued to uphold their agreement with the Federal government under the terms of Title 33 and have funded these requirements on an annual basis as required since the system was turned over for operation.

The following table provides the 15-year maintenance history and noted deficiencies.

Year	Levee Condition Rating	Issue	Maintenance Effort	Extent of Maintenance Effort	Pump Station Rating
2002	Minimum Acceptable	Deterioration of closure structures. Deterioration and siltation of gravity drains and drain aprons.	Work in progress	Low level effort	Satisfactory
2001	Acceptable				
2000	Acceptable				Satisfactory
1999	Acceptable				Satisfactory
1998	Acceptable				Satisfactory
1997	Acceptable				Acceptable
1996	Acceptable				Acceptable
1995	Acceptable				Acceptable
1994	Acceptable				Acceptable
1993	Acceptable				Acceptable
1992	Acceptable				Acceptable
1991	Acceptable				Acceptable
1990	Minimum Acceptable	Vegetation needs to be removed. Siltation in outlet channels. Debris in inlet drain.	Issues addressed	Low level effort	Acceptable
1989	Acceptable				Acceptable
1988	Minimum Acceptable	Two slides in levee section. Vegetation in floodways. Siltation in outlet channels. Flap gate silted shut.	Issues addressed	Medium level effort	Acceptable
1987	Minimum Acceptable	Vegetation in riprap around drainage structures and in floodways.	Issues not addressed		Acceptable
1986	Satisfactory				Outstanding
1985	Satisfactory				Outstanding

In addition to the deficiencies noted during the annual inspection in the 15-year maintenance history table above, the problem of concrete deterioration has been noted during the annual inspections. The levee district has performed maintenance on these concrete structures to stop the deterioration. These maintenance attempts consisted of surface overlays to repair the deteriorated concrete. Since the concrete was defective to begin with, the surface overlays could not stop the deterioration of the concrete and the concrete continued to deteriorate into its present condition of needing to be replaced. This deterioration occurred through no fault of the levee district as they did perform the necessary maintenance on the concrete structures. The problem is that no amount of maintenance could stop the deterioration of concrete that was defective to begin with.

HQ Analysis: The information provided should be included in the report since it is helpful in understanding the past maintenance activities and whether there was any correlation between past maintenance efforts and the deficiencies currently experienced. In addition, it is not clear what has been done under PL 84-99 assistance and how those actions may have contributed to the current project conditions or may have

changed/clarified the sponsor requirements relative to OMRR&R. Section 5.1.2.1 indicates that after the flood event in 1973, about \$3.5M of assistance was provided under PL 84-99 between 1973 and 1975. This is substantially higher than the \$620,000 estimated following the 1993 flood of record and based on the dates for replacement of gravity drains in Table 1 of the Engineering Appendix, the PL 84-99 efforts likely included replacement of two gravity drains in 1973 and one in 1993 that are now recommended for rehabilitation as design deficiencies. It is not clear what further agreements /explanations of responsibilities were associated with the PL84-99 work efforts. This should be clarified to assure that work proposed for reconstruction/replacement is consistent with any requirements and conditions associated with the previous PL 84-99 activities.

Discussion: Concur. The district will attempt to explain PL84-99 work accomplished but is limited by the available historical documentation. In order to save time, the district would find it useful to understand which features are worthy of this investigation (e.g., are roofs included or not?). HQ acknowledged that they now have a better understanding of the work involved and how it relates to the work proposed.

Required Action: The district will include information from the response in the draft report. In addition, the district will include information to clarify responsibilities required by any PL84-99 work completed to date and any associated inconsistencies.

Additional HQ Analysis: Subsequent to the AFB, HQ further discussed the issues presented by this project related to concrete described above. These discussions concluded that the concrete has largely performed its function, but should be considered as part of the reconstruction effort proposed in the draft report and not as a design deficiency.

Compliance Action: A maintenance history table has been included in paragraph 5.1.2.2 of the draft report. Drains repaired under PL84-99 are not recommended for action and this has been clarified in paragraph 2.02 of the Engineering Appendix. Concrete problems identified in the report have been recommended for action under the reconstruction alternative as indicated in paragraph 6.2.2.

HQ Assessment: The concern is resolved by the text changes noted in the response.

c. Maintenance versus Reconstruction Measures. [Comment 2.c.] The text does not provide adequate rationale to support characterizing some of the recommended features as reconstruction. The Title 33 maintenance requirements are fairly detailed and absent further rationale it appears that several measures, such as sand blasting and painting metal closure gates, replacement of seals, corroded metal parts and fences, and pump replacements should be accomplished by the local sponsor as maintenance activities under Title 33. Further detail is needed to clarify the sponsor's understanding of maintenance requirements under Title 33, to describe the actions accomplished throughout the project life as maintenance versus P.L. 84-99 repairs, and to document the

response to the recommended actions in inspection reports. Information should also be provided regarding past rehabilitation and replacement activities. This information is needed to support the conclusion that the recommended measures are all reconstruction rather than maintenance activities and have not resulted from a lack of past maintenance. Specific concerns are as follows:

District Response: Information in the report is complete with respect to the sponsor's understanding and execution of their responsibilities under Title 33. They have operated and maintained the system and when something has failed or broken then it has been repaired or replaced. The sponsor has not undertaken an advanced repair or replacement program (rehabilitation/reconstruction) in anticipation of failure. Rehabilitation is major project feature restoration consisting of structural work intended to improve reliability of an existing structure, the result of which will be a deferral of capital expenditures to replace the structure. Such actions have not been undertaken by the Levee District and are not required or implied in Title 33 requirements. Nor was any schedule provided to the Levee District that would have provided information for such a plan as none existed and none was provided at project turnover. The case at hand is that now with the age of the system it would be prudent to complete a major rehabilitation/reconstruction (i.e. take planned action in advance of a failure) of the system to ensure it continues to operate and provide the benefits intended by Congress into the future. Under the current scenario without action being taken all pieces and parts continue to age and failure becomes a more common occurrence under the laws of probability. With the potential loss of life, loss of economic base and catastrophic environmental contamination a future failure could pose it appears prudent to undertake a major rehabilitation (reconstruction) project for this levee system now. The sponsor does not have the technical or financial wherewithal to accomplish such an undertaking independently. They do however have the capability to participate as cost share partners in such a project.

HQ Analysis: The current requirements for OMRR&R are not new, but a clarification of what had been intended as local sponsor's O&M. Once a project has been turned over to the local sponsor for maintenance, there has been no mechanism or authority for the Corps to go back into the construction phase except to remedy design and construction deficiencies. Therefore, reconstruction requires Congressional authorization. Specific comments regarding the district's responses on the various features are noted in the paragraphs below.

(1) Closure Structures. [Comment 2.c.(1)] For closure structures, the Title 33 O&M responsibilities included inspection to assure proper closure could be made and that metal parts were adequately covered with paint. Damaged or missing parts were to have been repaired or replaced immediately. It is not clear how the recommended closure gate rehabilitation, which includes painting and seal repair of closures as well as other measures, differs from required maintenance under Title 33. Section 3.01.b.(6) in Appendix A notes that two gates have been rehabilitated by sand blasting and painting, although it does not indicate the date or entity that performed the work. Previous rehabilitation of these gates by the sponsor would indicate an understanding that this was

a local O&M responsibility and would support treating the remainder of the gates similarly.

District Response: Paint coat maintenance has been carried out for some 40 years by Wood River personnel obviously with some success as these structures are still operable. Paint coat failures at the project are attributable to the very aggressive environment caused by road spray containing de-icing agents (salt) and debris projectiles. The Original title 33 requires that metal parts remain adequately covered with paint. In the conditions that existed during design of the project, providing adequate paint coverage was a reasonable and acceptable responsibility for the DLD. However, since the environmental condition has worsened, with the increase of traffic and use of chemical snow removal methods this provision is no longer such a simple matter on structures that are now 40+ years old. Normal painting would do little at this point to provide for continued long-term structural integrity and sand blasting, a precursor to more serious major rehabilitation, now requires permitting and expensive environmental controls because original coatings were lead based. None of these situations was anticipated by the requirements detailed in the original Title 33. Modern paint materials and proper application methods (recoating vs painting) could be used to resist the degradation associated with the increased environmental exposure, but the cost and expertise required for these methods removes them from the definition of "maintenance". It is the difference between for example performing touch up painting on your car as a part of your normal maintenance and taking your car to say MAACO for a complete repainting. In summary, after 40 years maintenance of the existing paint coatings, the current condition requires in today's changed environment a fix that is not reasonably defined as maintenance under the terms of original agreements

As indicated throughout the report the Wood River Drainage and Levee District has maintained and operated the system in compliance with requirements given them and as items have failed the Wood River Drainage and Levee District has taken actions required by Title 33 to "repair" the system. As the system now after 45+ years continues to age, failures are likely to occur with greater regularity and even simultaneously during future flood events. However, the fact that the DLD repairs or replaces items as they break or fail does not lead one to the conclusion that they therefore have an understanding or knowledge of, or responsibility for, major rehabilitation/ reconstruction under Title 33. It is not reasonable to assume that the DLD has the technical or financial resources to rehabilitate/reconstruct this system now all at one time. Had DLD been given the type of information provided under today's OMRR&R requirements they would have had an organized method to plan for, budget for, and take action across the system over the past 45 years so that today they would not be in this situation. However, this is not the case, as they were never given such information upon which to plan and take action. The current situation significantly increases the possible failure of the system during a future flood event.

The justification of a major rehabilitation/reconstruction project should be predicated on the fact that future failure will occur at an increased rate and economic and environmental consequences of failure are great enough to warrant advanced action. It is clear that

neither Title 33 nor the O&M agreements at the time of levee turn over placed this level of sophisticated action on the DLD.

HQ Analysis: It is understandable that rehabilitation/reconstruction of the system may be beyond the financial capabilities of the sponsor to perform all at one time. However, the Title 33 requirements (inspection and replacement of damaged or missing parts needed to assure proper closure could be made) would seem to include seal replacement as a maintenance item. The response indicates that changed conditions are responsible for accelerated corrosion and the current need for rehabilitation or replacement of the steel closure structures. Such changed conditions were beyond the capability of the government to foresee or advise the sponsor. The comparison of alternatives should include seal replacement as part of the No Action/Continued Maintenance scenario, which is considered relative to the Rehabilitation and Replacement/Reconstruction scenarios.

Discussion: Some items related to closure structures are unclear to the review team (e.g. are there some areas where we are only replacing seals and not gates?) and need further discussion in the Limited Reevaluation Report. For example, the district explained seal replacement work would only be undertaken if rehabilitating or replacing a closure structure – this kind of information needs to be clarified in the Limited Reevaluation Report.

Required Action: The district will explain that the proposed work relates to the rehabilitation/reconstruction of closure structures in the draft report.

Compliance Action: Two tables have been included in paragraph 3.03 of the Engineering Appendix to assist in clarifying actions recommended for the closure structures. Text has been modified to reflect the fact that seals etc. will be replaced as a part of replacing a gate or reconstructing a gate.

HQ Analysis: The concern is partially resolved by the text changes noted in the response. Section 5.6.1.3 discussions on closure structures should be revised regarding the quality of concrete slabs and the improper construction methods, since all concrete work has been characterized as reconstruction. Table 5-8 on Classification of Problems should also be revised, since it indicates that the cause for deterioration of concrete at gatewell and closure structures is a construction deficiency and places responsibility upon the Corps.

District Response (5 Aug 05): Text in Section 5.6.1.3 and Table 5-8 have been revised to classify work as a reconstruction measure, not a deficiency.

HQ Assessment: This concern is resolved by the text changes noted in the District's response.

(2) Pumping Stations. [Comment 2.c.(2)] For pumping plants, measures to be undertaken under Title 33 included cleaning plant, buildings and equipment; repainting as necessary; and lubricating all machinery, in addition to testing of electrical and communication systems and making a record of the results. Have the corrugated metal roofs, fences, and embedded metal been routinely painted? Some pumps (Rand Avenue) have been replaced or repaired through the years and it is not clear whether that was done under O&M or as a previous Federal rehabilitation. If pump repair and replacement was accomplished previously under O&M it would support treating further actions of that nature similarly.

District Response: A review of inspection reports indicates the Levee District has maintained all pumping plants in an acceptable manner.

As indicated throughout the report as items fail the Wood River Drainage and Levee District takes actions required by Title 33 to "repair" the system. As the system continues to age these failures are likely to occur with greater regularity and even simultaneously. This significantly increases the possible failure of the overall system. However, the fact that the DLD repairs items as they fail does not lead one to the conclusion that they are therefore responsible under their Title 33 terms for major rehabilitation/reconstruction. Major rehabilitation/reconstruction would be the repair and replacement in advance of failure on some predetermined schedule based on use or age. The justification of a major rehabilitation/reconstruction project should be predicated on the fact that future failure will occur at an increased rate and economic and environmental consequences of failure are great enough to warrant advanced action. It is not reasonable to assume that the DLD has the neither technical nor financial resources to rehabilitate/ reconstruct this system now all at one time. Had they been given the type of information provided under today's OMRR&R requirements they would have had an organized method to plan for, budget for, and take action across the system over the past 45 years so that today they would not be in this situation. However, this is not the case, as they were never given such information upon which to plan and take action. It is clear that neither Title 33 nor the O&M agreements at the time of levee turn over placed this level of sophisticated action on the DLD.

HQ Analysis: HQ understands and accepts the response. There is a concern though as to the degree to which future OMRR&R costs and responsibilities are defined for the sponsor as part of this report analysis. In particular, for those project features, which are not proposed for rehabilitation because they are currently in good condition or have been previously rehabilitated (some components of pumping plants, stop log closures, previously rehabilitated closures), does the OMRR&R estimate represent the total project requirement versus just those features recommended for rehabilitation/reconstruction?

Discussion: Concur.

Required Action: The district will review information currently included in the Limited Reevaluation Report related to Title 33 requirements, the sponsor's maintenance

activities and determine whether any additional clarifying information should be included in the draft report.

Additional HQ Analysis: Subsequent to the AFB, HQ further discussed the issues presented by this project related to pump stations. These discussions concluded that pump station improvements should be treated as a reconstruction activity and analyzed for justification in accordance with general Corps' Major Rehabilitation methodologies.

Compliance Action: A schedule for all required replacements, repairs and rehabilitations has been made that addresses all project components that will require future action. This schedule, which has been included in the Cost Engineering Appendix covers a 50-year period and provides a repeating sequence of actions necessary to keep the system fully operational. The annualized costs associated with these required activities are reflected in the economic analysis. These costs are over and above the annual operation and maintenance costs currently being borne by the Wood River Levee District. The current annual operation and maintenance funding identified paragraph in the draft report in paragraph 5.1.2.2 that is being currently spent by the Sponsor is considered adequate to address ongoing O&M needs.

A reliability analysis was performed in order to determine a probability of failure for each pump station. This information is contained in paragraph 4.04 of the Engineering Appendix. An incremental analysis is provided in the Economic Appendix. This analysis demonstrates that recommended actions are incrementally justified.

HQ Analysis: The concern is partially resolved by the text changes noted in the response. However, there is still concern over the incremental analysis given that the benefits attributed to the incremental features far exceed the total benefits shown for the entire project. See comment 2.d. (5)

District Response (5 Aug 05): The relation of incremental benefits to total project benefits is discussed in detail in the response to comment 3.d.(5)(b) and in the Economic Appendix.

HQ Assessment: This concern is resolved. Although the response to comment 3.d.(5)(b) lacks detail, the revised Economic Appendix now shows that the total of incremental benefits attributed to the levee components is similar to the value of benefits for the overall levee system.

(3) Relief Wells and Drains. [Comment 2.c.(3)] Title 33 indicates that relief wells and toe drain systems were to have been inspected to assure that they were in good working condition and had not become clogged. The drains and gates were to be maintained in good working condition. Although the underseepage design may have been inadequate, it isn't clear what the sponsor has done to satisfy the Title 33 maintenance requirement for the maintenance of relief wells, since efficiency is severely reduced and

they are not functioning as needed (how does the existing condition differ from being clogged?).

District Response: ‘Clogged’ infers the prevention of flow from the well due to outside considerations – damaged outlet works, debris due to inundation from flood events. The existing conditions being discussed in this document, which recommends the major rehabilitation of the relief wells, is due to chemical/biological incrustation of the well screen and gravel pack.

Maintenance has traditionally included maintaining the outside (outlet) portion of the relief wells works, including clearing debris or replacement, when necessary. Maintenance has not included rehabilitation of the relief wells, either by mechanical or chemical methods, to be the responsibility of the sponsor. This requirement was not clearly understood by the government until the Wood River wells were well past an age for action that today would be recommended practice.

HQ Analysis: HQ understands and accepts the response. There is a question with regard to those gravity drains that were already replaced in 1973 and 1993. The report indicates those drains are to be lined with concrete as well as the older drains that have not been replaced as part of the recommended plan. It is assumed that replacement of those drains was accomplished under PL84-99 and there may be local cooperation requirements that are different for such features with regard to OMRR&R.

Required Action: The district will include explanatory information provided in the response in the draft report. In addition, the district will include information in the draft report that describes the sponsor’s OMRR&R requirements for the whole project in order to ensure OMRR&R responsibilities are clearly defined in one document to protect the interests of the sponsor and the Federal government.

Compliance Action: The Engineering Appendix, paragraph 2.02, clarifies that drains replaced or lined as a result of PL 84-99 response are not recommended for action. These features are not included in the 50 year RR&R schedule described above as they are considered to be a final solution with a life expectancy of greater than 50 years. As discussed in paragraph 5.6.3 of the draft report, all levee features would be covered for future OMRR&R by the reconstruction project.

Additional HQ Analysis: Subsequent to the AFB, HQ further discussed the issues presented by this project related to relief wells. These discussions concluded that an insufficient number of relief wells appear to be a design deficiency and should be treated as such in this report. With regards to clean out of existing relief wells the district needs to present historical information that has been gained about relief wells to better support an understanding of the need for rehabilitation of existing wells. The district will explain, in the draft report, why it makes sense for the Corps to repair the existing wells while undertaking the construction of needed new relief wells, regardless of whether the repairs are considered a design deficiency, since the cost-share is relatively low and would assure the reliability of the underseepage control system. The draft report will further explain

that the sponsor would be responsible for O&MRRR for both existing and newly placed relief wells based on the execution of a new PCA. Proposed work related to gravity drains should be treated as reconstruction and analyzed in accordance with Corps Major Rehabilitation methodologies.

Compliance Action: The draft report paragraphs 5.3.2.3 and 5.6.3 describe the lack of knowledge by the Corps and absence of direction to the Sponsor for the adequate maintenance of existing relief wells. The current degradation is directly attributable to this. The 50 year RR&R schedule developed for future relief well maintenance, contained in the Cost Engineering Appendix, makes it clear that there was never an understanding by either party of the extent to which this maintenance was required nor was there a disclosure previously of costs associated with this maintenance. The one time rehabilitation of these well should be considered as a part of the authorized project with future OMRR&R costs to be borne by the sponsor.

An incremental analysis is provided in the Economic Appendix for the gravity drains. This analysis demonstrates that recommended actions are incrementally justified.

HQ Analysis: The concern is partially resolved by the text changes noted in the response. However, there is still concern over the incremental analysis, given that the benefits attributed to the incremental features far exceed the total benefits shown for the entire project. See comment 2.d. (5). In addition, the review team has further reviewed the report information on existing relief wells and has concern over characterizing the redevelopment of the existing wells as a design deficiency. Despite the fact that the designers did not anticipate the OMRR&R requirements for the existing relief wells, the redevelopment of the existing wells is considered to be a maintenance-related project deficiency, which should be the responsibility of the sponsor. This work should be accomplished prior to or concurrent with the provision of new relief wells in order to assure the underseepage control system will function in a safe, reliable manner and to achieve any potential cost efficiencies for replacement wells.

Section 5.1.1.3, Flood Control Regulations for Maintenance and Operation of Flood Control Works presents the discussions of Title 33 O&M requirements beginning on page 9. The report appears to assume that the particular O&M responsibilities that the Sponsor must assume are static over time, however the review team believes that is not the case. Upon project turn over, the local sponsor is now responsible for all OMRR&R, which likely involves increased efforts and costs as the project features age and deteriorate. The Corps' ability to modify, reconstruct, repair, replace, etc requires additional Congressional authorization, unless that work is legitimately a design or construction deficiency. After considerable discussion and internal debate, the HQ review team concludes that redevelopment of the existing relief wells is a local O&M responsibility and the final report should be revised accordingly.

Revised HQ Analysis 6 May 2005: The concern is partially resolved. Based on information provided by the St. Louis District, HQUSACE concurs with the district position that the rehabilitation and/or replacement of clogged wood-stave relief wells

should be undertaken as a design deficiency pursuant to existing project authority. Additional information should be added to the LRR to further support this characterization. DAEN-CWR-R Memorandum, 13 February 1987, subject: Cost Sharing for Correction of Design or Construction Deficiencies, states the cost sharing of design deficiencies shall be the same percentage as specified in PL 99-662, as amended, for the project purposes. Currently, the LRR states that the designers did not anticipate the OMRR&R requirements for the existing wood-stave relief wells, and accordingly this is the basis for characterizing the repair/replacement of the existing wood-stave relief wells a design deficiency. Headquarters concurs with this argument, but the draft report should be revised to clarify the intent of the designers as stated in TM-3-430. Specifically it should be noted that the TM discusses that clogging due to back flooding was known and anticipated while clogging due to biofouling was either unknown or overlooked. The TM discusses the requirement of ensuring well efficiency and recommends pump tests every 5 to 8 years to compare specific capacity results to those after installation. Yet the TM is silent on the need to attend to biofouling maintenance. An additional argument that must be included in the LRR to support the design deficiency characterization is the apparent lack of understanding of the subsurface and soil conditions. Given the silt and clay soils the use of wood-stave wells was inappropriate as there would be a tremendous amount of a maintenance required and biofouling should have been expected. All references to the disclosure of OMRR&R as a basis for undertaking work as a design deficiency should be removed from the report.

Required Action (6 May 2005): The district will revise the draft report to further support the arguments made to repair and rehabilitate the existing wood-stave relief wells under the design deficiency authority. Reference should be made to the Technical Memorandum-3-430 (TM-3-340).

District Response (5 Aug 05): An explanation of the deficiencies in the original design of the wood-stave relief wells and the overall underseepage system has been added to the report in paragraph 5.3.2.4. The relation of incremental benefits to total project benefits is discussed in detail in the response comment 3.d.(5)(b) and in the Economic Appendix.

HQ Assessment: This concern is resolved by the text changes in Section 5.3.2.4 and the Economic Appendix.

d. Economic Analysis. [Comment 2.d.]

(1) **Future Rehabilitation Costs.** [Comment 2.d.(1)] Discussion should be provided to clarify the Operation and Maintenance Costs used in the BCR computation. The annual value of \$650,000 is higher than what has historically been documented over the last 10 years (\$451,000 on page 11), but there is no mention of future rehabilitation by the sponsor- only O&M. The discussions in the Engineering Appendix on the condition of project features infer that future rehabilitation will be required beyond the actions proposed as part of this reconstruction project. Paragraph E-5.d. on page E-17 of ER 1105-2-100 requires that the life cycle costs including OMRR&R be accounted for in

the development of project cost estimates. Rehabilitation was to be included as a local responsibility in a revised PCA, according to the 4 August 1999 CECW-PC guidance memorandum contained as Item 12 of the submission. Additional information is needed to assure that the future rehabilitation requirements have been adequately accounted for in the economic analysis.

District Response: The questions raised here will be more completely addressed in the draft report. A review of the projected OMRR&R costs for the project annualized at \$650,000 will be re-verified. However, the project B/C is sufficient to justify the project under almost any scenario.

HQ Analysis: The response appears acceptable to address the concern. The future rehabilitation costs are important from the standpoint of economic justification and as a basis for financial planning by the levee district to accomplish future OMRR&R.

Discussion: Noted. A discussion of how to handle OMRR&R costs was undertaken. HQ acknowledged that a simple approach is acceptable; the bottom line is that the OMRR&R costs need to be clearly outlined and accurately accounted for in the Limited Reevaluation Report.

Required Action: The district will ensure the Limited Reevaluation Report includes sufficient information to assure that the future rehabilitation requirements have been adequately accounted for in the economic analysis and in the computation of the OMRR&R requirements of the sponsor. This will provide a sound basis for the sponsor to do financial planning for the total project.

Compliance Action: A schedule for all required replacements, repairs and rehabilitations has been made that addresses all project components that will require future action. This schedule contained in the Cost Engineering Appendix covers a 50-year period and provides a repeating sequence of actions necessary to keep the system fully operational. The annualized costs associated with these required activities are reflected in the economic analysis. These costs are over and above the annual operation and maintenance costs currently being borne by the Wood River Levee District discussed in paragraph 5.1.2.2 of the draft report. The current annual operation and maintenance funding identified in the draft report that is being currently spent by the Sponsor is considered adequate to address ongoing O&M needs. As discussed in paragraph 5.6.3 of the draft report, all levee features would be covered for future OMRR&R by the reconstruction project PCA.

HQ Analysis: The concern is resolved by the text changes noted in the response.

(2) **MCACES Project Costs.** [Comment 2.d.(2)] The project costs included in the MCACES estimate include features that do not directly correlate with the project description for the recommended plan on page 33 of the text. This leads to confusion as to whether the MCACES estimate used in the economic analysis is appropriate for the

recommended plan. For instance, the selected plan section makes no mention of work at the East Alton No. 1 Pumping Station although costs of \$682,000 are included in the MCACES estimate. The MCACES estimate notes that there are 25 closure structures requiring rehabilitation work. It is not evident from the description in paragraph 6.4.2 how many closure structures are being rehabilitated. Also, paragraph 6.4.1 indicates that there are 38 gravity drains being either replaced or lined, however the MCACES estimate shows work on 37. The district should review the MCACES estimate in relation to the selected plan description and revise the text or estimates as needed to assure that there is agreement between the two sections and the appropriate project costs are used for the economic analysis.

District Response: The questions raised here will be clarified and/or corrected in the draft report.

HQ Analysis: The response appears adequate to address the concern. Discrepancies should be resolved in the draft report.

Required Action: The district will review the MCACES estimate to ensure it is accurate as part of the development of the Limited Reevaluation Report.

Compliance Action: Discrepancies have been corrected and the MCACES components match those described in the draft report.

HQ Assessment: The concern is resolved.

(3) OMRR&R Costs. [Comment 2.d.(3)] No MCACES cost estimates or descriptive backup is provided relative to the estimate of O&M costs. Similar cost information to that provided for the reconstruction costs should be provided to support the estimate for the O&M costs used in the analysis to assure that it is complete in accordance with paragraph D-3.e.(9) of ER 1105-2-100.

District Response: The questions raised here will be more completely addressed in the draft report.

HQ Analysis: The response appears adequate to address the concern. The draft report will include further MCACES and descriptive information with regard to OMRR&R costs.

Required Action: The district will develop MCACES estimates to support the OMRR&R costs included in the Limited Reevaluation Report.

Compliance Action: See Compliance Action paragraph 2.d.(1)

HQ Assessment: The concern is resolved.

(4) Interest During Construction. [Comment 2.d.(4)] The text does not discuss the analysis of interest during construction, although Table 6 of the Economic Appendix appears to include a compound value for construction expenditures that may reflect the calculation of IDC as part of the benefit to cost evaluation. The text should explicitly address the calculation of interest during construction to assure that it is clear that this has been included in the economic analysis in accordance with the guidance in paragraph D-3.e.(10) of ER 1105-2-100.

District Response: Table 6 has been revised to clarify this confusion by specifically breaking out interest during construction, which is \$2,734,370. This does not change the Total Average Annual Costs, which remain \$2,117,000. These revised tables will be included in the draft report.

HQ Analysis: The response appears adequate to resolve the concern. Interest during construction was included in the analysis and Table 6 was revised to display IDC as a separate line item.

Required Action: The district will include the revised Table in the draft report and make any associated changes to the report text.

Compliance Action: Revised tables reflecting interest during construction are included in the Economic Appendix of the draft report

HQ Analysis: The concern is not fully resolved. The prior value of \$2,734,370 for IDC has been reduced significantly to the current value, \$1,908,840, in the draft report. Please explain how this was accomplished and the key assumptions for the IDC calculations.

District Response (5 Aug 05): IDC concern is addressed in Economics Appendix under Construction First Costs and Interest During Construction. In calculating interest during construction, interest is charged for each year funds are expended during the construction period due to the time value of money and project construction preventing alternative uses of such funds. A three-year construction period is assumed for the project, and the mid-year convention is used.

HQ Analysis: **This concern is not fully resolved** by the information provided in the response and the Economics Appendix. The presentation in the final report leads to some confusion regarding the assumptions used for the IDC calculation in the economic analysis. The Economic Appendix notes that the project base year is 2008 on numerous tables and it also states that interest during construction is calculated based on an assumed three-year construction period, as noted in the above response. It is not clear whether the costs for PED expended to date have been treated as sunk costs in the IDC calculation, as they should be. Further, the implementation schedule shown in Table 8-1 indicates that the project construction extends from FY07 to FY14 with reconstruction beginning in FY08 (see Section 8.4). This appears to be inconsistent with the IDC assumption of a three-year construction period, and indicates the base year should be 2014 rather than 2008 with benefits resulting during construction as features are

completed. Resolution of the concern may therefore impact the economic results shown in the report and Economic Appendix. Note also that the BCR shown in Section 6.3 should be made consistent with that shown in Table 6-1 and Table 8 in Appendix B.

District Response (24 Mar 06): IDC assumptions and calculations in the Economic Appendix have been adjusted to correspond with the text in Section 8.4 and Table 8-1 Funding Stream of the final GRR.

HQ Assessment: The concern is resolved.

(5) Benefit Analysis. [Comment 2.d.(5)] An estimate of benefits for the overall rehabilitation project was developed based on a comparison of the damages that would be experienced with failure of the project due to exterior flood stages under the without and with rehabilitation conditions. That methodology seems appropriate for measures like underseepage control/relief wells, which protect the structural integrity of the levee and for which failure is related to exterior flooding levels. However, a different methodology and damage stream would seem appropriate for the other components proposed for rehabilitation, such as closure structures, pump station structures, or pumps and motors, where the damage mechanism may be very different and less related to the exterior flood stages. The damages, which would be experienced without rehabilitation of those features, may involve increased ponding and interior flooding or closure leakage/failure, requiring increased flood fighting costs at very infrequent events. Incremental analyses of the individual features should be undertaken to evaluate the benefits for rehabilitation using methodology appropriate for the features, based on reducing the damages, which would occur in the absence of rehabilitation for those measures, similar to the requirements for major rehabilitation at projects operated by the Federal government (reference Appendix E, Section X of ER 1105-2-100 and EP 1130-2-500).

District Response: Disagree with the conclusion that each part of this system must be incrementally justified. This may be appropriate for a new system to be recommended for construction but not an existing system requiring major rehabilitation/reconstruction. The levee in place is an operational system that works as a unit to provide the overall level of protection as intended by congress. The original authorization for the Wood River D & LD as well as all the other urban design levee projects built by the St. Louis District, except Prairie Du Pont, did not include incremental justification for any of the pumping stations or closure structures. For urban projects, storm water is primarily fed to the line of protection by sewers rather than open channels, there is little detention storage available, and temporary ponding of water on streets is unacceptable. The need for pumping stations was considered just as necessary as the requirement for gravity drainage. Likewise closure structures are necessary for the functioning of the system in the urban environment and their reliability is integral to the performance of the overall system.

Since the original authorization for Wood River did not require incremental justification for the pumping stations, no data is available as a basis for hydrologic-hydraulic analysis of interior flooding related to each individual pumping station drainage area. A detailed

analysis for each of these drainage areas would be very costly, especially in light of the fact that most of these areas are primarily sewered. That same money would be better spent actually repairing the existing pumping equipment. There has been no significant decrease in population or housing stock in the protected area that would eliminate the need for any of the existing stations.

Records from the Wood River D & LD show that all the pumping stations have logged a significant number of hours of pumping, since they were originally built. If little pumping time was recorded on these stations the last 40 years, then maybe a logical conclusion would be that major rehabilitation may not be justified.

The project was originally justified and remains so today. To continue to expend the financial resources of both the Federal government and of this already cash strapped sponsor to prove by further study what is already intuitively obvious does not appear to meet the test of being good stewards of the tax payers' money. During the development of this report the St. Louis District took its lead from comments received during the preparation for the rehabilitation justification of Lock 27 Major Rehabilitation, March 2002, where St. Louis District was specifically told in review comments that the "system" should be justified for rehabilitation not the individual pieces and parts.

HQ Analysis: It is understood this is rehabilitation/reconstruction of an existing project, not new construction, and that the levee district has limited funds. However, sufficient analysis is needed to assure a prudent investment. The Federal government should not undertake less stringent investigations to support its decision making on a cost-shared rehabilitation than it would undertake for a Federally funded rehabilitation. Major rehabilitation projects for Federally maintained projects are required to evaluate individual features to establish the justification for rehabilitation/reconstruction, based on a comparison between with and without rehabilitation conditions that may involve failure. This does not require evaluating justification for individual parts and pieces that form a system as noted in the Lock 27 guidance. For the Wood River project, the features evaluated should include closure structures, pumping stations, and relief wells/gravity drains (i.e. no analysis is needed of individual pumps, valves etc. versus a pumping station).

Guidance in ER1165-2-119 entitled Modifications to Completed Projects indicates in Paragraph 7.c. that proposed corrective work should be justified incrementally by current economic considerations (future project costs and benefits; the sunk costs for the original project excluded) unless it is otherwise shown that the work is necessary for safety reasons. Although the various component features of the Wood River project act together to provide protection, the implications of failure for the component features may be significantly different and require separate evaluation. For instance, the underseepage problems related to relief wells and failure of large CMP gravity drains could result in structural failure of the overall project at levels below the design level of protection, resulting in significant safety and environmental concerns. The closure structures would seem to have very different failure mechanisms if not reconstructed. They would cause

lesser impact that might involve significant increases in maintenance costs, leaking seals, and increased emergency response requirements.

The failure of pumping stations might create increased interior flooding and emergency response costs if they are not reconstructed. Current economic considerations for interior drainage analyses involve the evaluation of coincidence between storm events, which affect the tributaries/interior areas and the river for which the main line protection is provided. If the two are essentially independent, the damage/benefit stream for interior flooding is additive to that from the main line protection and the benefit analysis for the overall levee would have no bearing on the justification of interior flood control features beyond minimum facilities. Given that the text states that there has been and will continue to be development in the protected area, the incremental justification of interior flood control facilities should be evaluated to assure that replacement/reconstruction of pumping stations is recommended in the most efficient manner considering the existing and future development conditions. For instance, replacement of the existing pumping station facilities with similar capacity pumps may result in damages that could be avoided if slightly larger pumps were recommended. It would be prudent to conduct sufficient studies to make the best investment in the pumping stations for the current conditions, since new authority will be necessary to undertake reconstruction.

Discussion: It was acknowledged that formulation of projects was different in prior times. However, the need to meet contemporary analytical and cost-sharing standards was discussed. HQ needs to understand whether it is “worth it” to invest in pump stations, for example. It was explained that the system was built to match the flows delivered via the sewer system. It is unclear to the district how to demonstrate how the pump stations are justified given the lack of data availability (flat area, little accurate information on the existing sewer system, etc.). The district inquired as to whether there was a different way to approach this contemporary need given the data constraints (and limited funds). HQ explained that a new start investment would be impossible to justify without such information. The district thought maybe the pump stations could be looked at as meeting a minimum health and safety requirement, etc. A crude analysis based on reasonable assumptions perhaps could be undertaken to support the analysis needs although it could not be used for optimization purposes. The district does have first floor elevations based on random samples available in the GIS. In addition, it was acknowledged that this type of analysis may need to be undertaken for each pump station, as they all differ character.

Required Action: The district will include an incremental benefit analysis for pump stations as discussed in the draft report to extent practicable given the data limitations using appropriate assumptions. The district will explain changes in the area since the original construction and whether this poses any implication for the sizing of pump station in the draft report. In addition, incremental analyses will be shown for the underseepage, gravity drains, and gate closure components.

Compliance Action: An incremental benefit analysis for pump stations has been included in the Economic Appendix based on available data and standard failure analysis.

HQ Analysis: The concerns about incremental justification of project elements have been partially resolved. Pumping plants were analyzed separately. Underseepage elements, gravity drains, and closure structures were analyzed by reach. This is a reasonable approach. Each of these project elements is economically justified, with one exception, discussed below in (a). In addition, there is concern that benefits claimed for the incremental features far exceed the total benefits shown for the entire project as explained in (b) below. Also, it is not clear what the basis was for failure assumptions of incremental components, as discussed in (c).

District Response (5 Aug 05): The relation of incremental benefits to total project benefits is discussed in detail in the response to comment 3.d.(5)(b) and in the Economic Appendix.

HQ Assessment: This concern is resolved. Although the response to comment 3.d.(5)(b) lacks detail, the revised Economic Appendix now shows that the total of incremental benefits attributed to the levee components is similar to the value of benefits for the overall levee system.

(a) East Alton #1 Pumping Station. Reconstruction of two stormwater pumps and the emergency closure sluice gate and replacement of a trash rack are recommended for this facility. Total costs are \$682,000. NED benefits were not calculated. The pumping station was built in 1988, primarily to control seepage from the L&D 26 Replacement Project. The pump station replaced two smaller pump stations, and was authorized and constructed as a utility relocation associated with construction of L&D 26 Replacement. The L&D project increased groundwater elevations landward of the levee. This added pumping requirement, surpassed the capability of the existing pumping stations. The draft report indicates the East Alton #1 pumping station is necessary in order for the Federal L&D project to operate satisfactorily. Suggest the district take another look at possible benefits for the proposed modifications. If the pumping station fails, are there no damages in the 5.8 square mile drainage area served by this pumping station? If the district is unable to show economic justification for the proposed modifications, they should be deleted from the recommended plan. The higher groundwater elevations would then be part of the without project condition.

District Response (5 Aug 05): East Alton #1 Pumping Station was justified as a minimum facility required as a result of federal action and remains necessary as long as the federal project continues to operate. Damages are incurred if this pump station fails. However, no economics was performed or shown on this pump station as it was earlier justified as a minimum facility from federal action and remains necessary to maintain an acceptable level of operation as long as the federal project continues to operate. The title of the earlier official publication justifying East Alton #1 as minimum facility is being researched and will be provided.

HQ Analysis: This concern is not resolved. The report includes improvements at the East Alton #1 Pumping Station in the plan without demonstrating incremental economic

justification, noting on B-21 that the station was justified as a minimum facility required as a result of Federal action and remains necessary as long as the Federal project continues to operate. This is not appropriate justification for recommending reconstruction; the economic rationale and justification for the action need to be documented.

District Response (24 Mar 06): For appropriate justification for recommending construction, estimation of damages, damages prevented, benefits, net benefits and BCR for East Alton #1 Pumping Station have been completed and are included in the analysis.

HQ Analysis: The concern is resolved.

(b) Incremental Benefits Exceed Total. The total project benefits for the recommended plan are shown as \$5,780,750 on page ES-13 and in Table 6-1. This value was used for demonstrating the overall project justification for the levee system, including all the costs for the components in the system. Table 16 shows the average annual benefits of the gravity drain component as \$2,259,000. The relief well component has benefits that total \$4,828,000 (Table 17) and the closure structures total \$2,445,000 (Table 18). The pump stations are shown to have benefits that total about \$1,121,000 (Table 8). It is not clear whether the pumping station benefits relate to an additional benefit stream for interior flooding rather than external flooding, but the components are shown to have total benefits of \$10.653 million, about \$4.9 million greater than what is shown for the total project. This may result from a “first-added” analytical approach that assumes the other components are functioning with 100% reliability when failure occurs, thereby not considering the joint probabilities of failure. It may also result from using a combination of different methodologies (PUP, PFP/PNP). The text should explain these results further, clarify whether the interior flooding represents an additional damage stream, and support the reasonability of the results in demonstrating the incremental justification of the components.

District Response (5 Aug 05): The response to this comment in the PGM documentation presents a detailed discussion. Information has also been added to the Economic Appendix.

HQ Assessment: This concern is resolved. It is not clear what discussion in PGM documentation the above District response refers to for clarification. However, the revised Economic Appendix now shows that the total of incremental benefits attributed to the levee components is similar to the value of benefits for the overall levee system.

(c) Assumptions for Failure of Components. The report does not clearly explain the assumptions related to the triggering cause of failure for the components in the incremental analysis presentation. For example, seepage failure should be a function of PNP/PFP and river stage-frequency. The gravity drains through the levee would likely be similar. For the closure structures, the PUP should be a function of river stage-frequency

(probably above the PNP because water has to get to the bottom of openings) and some reliability of the gate materials. This should be clarified relative to the PUP information shown for various exterior stages in Table 2. For the interior pumps, the PUP should be a function of interior rainfall/stage/flow-frequency and the reliability of the pumping equipment. The text does not clearly explain how this was done. For some pump stations there are discussions of the back up effects that would occur some number of hours after the station becomes inoperable, however it isn't evident how that relates to an average annual probability of occurrence or annual damages. The information on page B-21 for the Home Garden and Lakeside pump stations discusses the damages during a 100-year event, then uses that value as an annual damage in Table 7. That would not account for its probability of occurrence in any given year, or the effects of other frequency storm events. The report should include further clarification on these failure and damage assumptions to support the benefits shown.

District Response (5 Aug 05): The text has been revised in the final report to make clear the structures affected from a 100-year event, and separately list the computed average annual damages associated with that particular pump station.

HQ Assessment: This concern is resolved by the text changes noted in the response.

e. Plan Formulation. [Comment 2.e.]

(1) Life Cycle Costs. [Comment 2.e.(1)] The analysis of alternatives discusses the consideration of various options for rehabilitation and replacement. However, there is no presentation on the life cycle costs (para.E-5.d. of ER 1105-2-100) to support plan formulation and selection. Further information should be provided in support of the findings and conclusions in section 5.6 to demonstrate that the plan formulation has resulted in the selection of the most economical alternatives.

District Response: This comment is confusing. Preliminary information contained in the Engineering Appendix should indicate to the reader that Life cycle costs were considered during plan analysis and selection of alternatives. This was the rationale used to determine what items would be refurbished, replaced or left alone. For example lining vs. replacement of gravity drains of a size that would allow adequate flow is based on cost and the predicted performance period of the rehabilitation, refurbishing pump motors rather than replacement is based on cost and their predicted performance period. Throughout the report if the least cost alternative was not chosen it was so stated and justified. During finalization of the draft report this concern will be addressed and the report modified as required so that this information is clearly understood by the reader.

HQ Analysis: The provision of additional cost information in the report for alternatives will help to clarify the concern. It is understood that the analysis considered options for rehabilitation and replacement versus no action/continued O&M and recommended a course of action based on these considerations. However, it would be helpful to decision makers to understand how competitive the alternatives are and the significance of any

tradeoffs between initial investment that is cost shared and OMRR&R which is not. In addition, it will more clearly depict the OMRR&R requirements for the sponsor as a basis for financial planning.

Required Action: The district will include additional cost information (planning level estimates) in the draft report.

Compliance Action: Planning level estimates developed during alternative development and comparison have been included in the Cost Engineering Appendix.

HQ Assessment: The concern is resolved by the changes to the Cost Engineering Appendix.

(2) **Incremental Analysis.** [Comment 2.e.(2)] The various features recommended for reconstruction should be evaluated as to their incremental justification in a manner similar to that used for major rehabilitation at projects, which are maintained Federally, in accordance with Chapter 3 of EP 1130-2-500. The analysis would need to address the probability of a component/element not performing properly (e.g. failing basically), consequences of that failure (physical and fiscal), and consideration of what actions would be taken after the failure occurred and how that affects the likelihood of failure again in the future.

District Response: Refer to comment 3.d.(5) above.

HQ Analysis: See the response for comment 3.d.(5).

Discussion: See the discussion for comment 3.d.(5).

Required Action: See the required action for comment 3.d.(5).

Compliance Action: Features recommended for reconstruction have been incrementally justified. The Engineering Appendix paragraphs 2.04, 3.04, 4.04 and 5.04 provide analysis of the probability of failure and the Economic Appendix provides an economic analysis that documents the incremental justification of each system component recommended for action.

HQ Analysis: The concern is partially resolved. However, there is still concern over the incremental analysis given that the benefits attributed to the incremental features far exceed the total benefits shown for the entire project. See comment 2.d.(5).

District Response (5 Aug 05): The relation of incremental benefits to total project benefits is discussed in detail in the response to comment 3.d.(5)(b) and in the Economic Appendix.

HQ Assessment: This concern is resolved. Although the response to comment 3.d.(5)(b) lacks detail, the revised Economic Appendix now shows that the total of incremental benefits attributed to the levee components is similar to the value of benefits for the overall levee system.

f. Cost Sharing. [Comment 2.f.] Paragraphs 6.2 and 6.3 of the text indicate that those aspects of the tentatively recommended plan which are considered related to design and construction deficiencies or non-disclosed maintenance requirements should be cost-shared 75% Federal/ 25% non-Federal in accordance with ER 1165-2-119. Although the regulation is out of date, it does not appear to provide a basis for the proposed 75%/25% cost sharing, but notes that deficiencies would be considered part of the original project and should be cost shared accordingly. The cost sharing for the original project is not discussed in the report, but presumably would have involved provision of LERRD. DAEN-CWR-R memorandum dated 13 February 1987, subject: Cost Sharing for Design or Construction Deficiencies provides substitute guidance for paragraph 7.c of ER 1165-2-119. It states that projects for correction of design and construction deficiencies should be cost shared as specified in PL 99-662 (WRDA 86, as amended) for the project purposes. Therefore, it is appropriate to apply 65%/35% cost sharing for the deficiency correction measures as a basis for determining the overall project cost sharing. Following response to the previous comment on reconstruction versus maintenance costs, the report should apply the appropriate cost sharing to the various features as appropriate for the classification of measures as deficiency, maintenance, and reconstruction in order to determine the overall project cost sharing requirements.

District Response: Disagree, PGL No. 51 provides the policy for applying the 65/35% cost sharing required by WRDA 96. It indicates that the 65/35% cost sharing only applies to projects authorized after 12 October 1996. Since Wood River was authorized prior to WRDA 86 our policy is to cost share the design or construction deficiency work at 75/25%. However, since the major rehabilitation/reconstruction work is anticipated to require additional Congressional authority, this work would be considered a project modification that would require that portion of the project to be cost shared at the new rate of 65/35% per WRDA 96.

HQ Analysis: The project cost sharing is 65% Federal /35% non-Federal whether the features are recommended for reconstruction requiring new authority, or are design deficiency corrections that may be addressed under the existing project authority. The budget EC provides clearer direction in this regard and cites the cost sharing for reconstruction as in accordance with WRDA 86, as amended.

Required Action: The district will use the referenced cost-sharing in the draft report to be in accord with law and policy.

Compliance Action: Referenced cost-sharing has been corrected in Section 10 and paragraph 8.5 to be compliant with HQ policy.

HQ Analysis: The concern is resolved by the text change noted in the response. Note that based on the discussions in Comment 2.c.(3) the costs for redevelopment and/or replacement of the existing relief wells should now be shown as local O&M.

District Response (5 Aug 05): Based on the Revised HQ Analysis 6 May 2005, HQ concurred "...that the rehabilitation and/or replacement of clogged wood-stave relief wells should be undertaken as a design deficiency pursuant to existing project authority." Our position is that this comment supersedes the previous 2.c.(3) comment regarding redevelopment of existing wells as an O&M cost.

HQ Assessment: This concern is resolved as noted in the response.

g. Completeness. [Comment 2.g.] It is not clear what provisions are being made to assure that the project will function as intended in the event that a large flood occurs during the recommended rehabilitation efforts (i.e., what will be done if a flood occurs during gate rehab). The report should provide information to show that the project is complete and will achieve the planned effects in accordance with the paragraph E-3.a.(4)(a)(2) on page E-4 of ER 1105-2-100.

District Response: This is an alternative formulation briefing package not a draft or final report or a design package. The questions raised here are valid and can be further addressed in very broad terms in the draft report however, this level of detail is not known in its specifics until actual design and construction packages are prepared and sequenced for execution. This is not an uncommon situation faced during levee modifications and repairs all of the time. Contingency plans are always considered prior to work being undertaken to ensure protection of the area under construction.

HQ Analysis: Refinement of the details for contingency plans during further studies is acceptable, however sufficient costs should be included in the MCACES estimate to assure the project is complete and addresses these considerations The text should note whether they are included as either line item or as contingency values.

Required Action: The district will include requested explanatory information in the draft report.

Compliance Action: The MCACES estimate includes costs with specific line items for cofferdams etc. that may be required during construction.

HQ Assessment: The concern is resolved.

h. Environmental. [Comment 2.h.] The environmental and real estate appendices are still under development. It is recommended that these appendices be submitted to HQ for review prior to release of the LRR.

District Response: These items will be incorporated into the draft report.

HQ Analysis: It is acceptable to incorporate the real estate and environmental appendices into the draft LRR and provide the document for review prior to release for public coordination.

Required Action: The district will provide both the environmental and real estate appendices of the draft report to HQ for review prior to release for public coordination.

Compliance Action: An Environmental Appendix and Real Estate Appendix are included in the draft report. These appendices have been provided to HQ for review simultaneously with the draft report ITR period and prior to submission of the draft report to HQ and release to the public.

HQ Assessment: The concern is resolved by provision of the appendices.

i. Local Cooperation. [Comment 2.i.] The report should include a listing of the local cooperation requirements for a new project agreement in accordance with the guidance in the PGM. This should include future rehabilitation efforts as well as current standard language for floodplain regulation and other applicable items.

District Response: These items will be incorporated into the draft report.

HQ Analysis: The response appears adequate to address the concern.

Required Action: The district will include referenced information in the draft report.

Compliance Action: Requirements for local cooperation are identified in Section 10, Recommendations, of the draft report.

HQ Analysis: This particular concern is resolved. Note, however, that there are new comments on local cooperation under paragraph 4.f.

District Response (5 Aug 05): The items of local cooperation have been updated.

HQ Assessment: This concern is resolved by the text changes in Section 10 as noted in the response.

j. Editorial Comments. [Comment 2.j.]

(1) **Table of Contents.** Paragraph 4.6 should be corrected to show 905(b) report.

District Response: Noted, correction will be made in the draft report.

(2) **Paragraph 5.1.2, page 10.** The referenced ER in the first sentence should be ER 1105-2-100.

District Response: Noted, correction will be made in the draft report

(3) **Paragraph 5.6.3.** The last sentence on page 30 needs clarification- was it intended to read as “failed during known flood event...?”

District Response: Sentence should read during non-flood events. This will be corrected in the draft report.

HQ Analysis: The proposed editorial changes address the comments.

Required Action: The district will include the suggested editorial information in the draft report.

Compliance Action: Corrections to the draft report have been made.

HQ Analysis: The concerns have been resolved by the text changes in the draft LRR.

4. COMMENTS - POST AFB. The review of this AFB package facilitated the identification of a number of policy issues that required resolution. Many of these policy concerns required a number of discussions outside the AFB to resolve. To ensure the record is clear with regards to the key policy decisions made as they relate to this project, a summary is provided below.

a. New relief wells. Work related to new relief wells can be classified as a design deficiency and, as such, can be undertaken under existing project authority.

b. Existing relief well clean-out. It appears that proposed work to clean-out existing relief wells can be pursued as a design deficiency, however the district needs to provide additional information to support this tentative decision.

c. Existing concrete and closure seals. Replacement of deteriorated concrete should not be treated as a design deficiency. The district will need to pursue this work as a reconstruction item. Replacement of closure seals may be considered integral to the concrete reconstruction work.

d. Gravity Drains. The proposed gravity drain work should be treated as a reconstruction activity and not a design deficiency.

e. Pump plants. Work related to pump plants should be treated as a reconstruction activity.

f. Incremental justification. All work needs to be shown to be incrementally justified and based on the primary causative factors of unsatisfactory performance.

Compliance Action:

- a. The need for new relief wells has been classified in the draft report as a design deficiency.
- b. The need to provide a one time well reconstitution program is documented in the draft report and the costs associated with future operation and maintenance for the well system clearly identifies the fact that neither the Federal government nor the local sponsor understood or anticipated this level of effort and financial investment and as such should be considered a design deficiency.
- c. All concrete work has been classified as reconstruction.
- d. All gravity drain work has been classified as reconstruction.
- e. All work related to pump plants has been classified as reconstruction.
- f. An incremental justification has been included in the draft report.

HQ Analysis: The majority of the concerns have been resolved in the Draft LRR. Further clarification is needed in regard to the incremental analysis as noted in comment [2.d.(5)]. The report should be revised to clarify discussions, which characterize as a design deficiency the Government's lack of "disclosure of OMRR&R" and its associated costs. While it may be the case that O&M costs are more than originally anticipated, the review team believes that even a more expensive O&M plan is the sponsor's responsibility. Further, with respect to repair, rehabilitation and replacement being a new requirement, this is not the case. As previously stated, the current requirements are not new, but further clarification of what sponsor O&M of a project requires. See pages ES-14, 12, 25-26, 34 (table), 36, 37-38, 39, and 43. The final report needs to reflect that rehabilitation of the existing relief wells is a local responsibility, which must be accomplished prior to or concurrent with the design deficiency work and any newly authorized and cost-shared reconstruction.

Revised HQ Analysis (6 May 2005): The majority of the concerns have been resolved in the Draft LRR. Further clarification is needed in regard to the incremental analysis as noted in comment [2.d.(5)]. Further consideration of the supplemental material provided by the district regarding the design of the existing relief wells has led to the conclusion that the redevelopment and replacement of those wells should be characterized as correction of a design deficiency and cost shared accordingly. See comment [2.c.(3)].

Required Action (6 May 2005): The district will revise the draft report to provide clarification on the incremental analysis and further support the arguments made to repair

and rehabilitate the existing wood-stave relief wells under the design deficiency authority. Reference should be made to the Technical Memorandum-3-430 (TM-3-430).

District Response (5 Aug 05): 4.f. Incremental Justification. The report has been revised to clarify the incremental analysis (Engineering Appendix section 5 and the Economic Appendix) and additional information regarding relief wells, including a life – cycle cost analysis has been included.

HQ Assessment: This concern is resolved.

5. COMMENTS - DRAFT LRR.

a. Economic Consequences Benefits. The district has developed a rationale for claiming NED benefits for the economic consequences of an inoperable pump station, in addition to prevention of physical damages. A willingness to pay by project area consumers, to keep the vital discharge flow-system running, is said to generate an economic value, as well as sanitary and health value, to the project area consumers. Further details are found on page B-19. This is not an established NED benefit category. The review team believes the district has not made a convincing case for this new benefit category. It should be deleted in the final report.

District Response (5 Aug 05): See PGM documentation.

HQ Assessment: This concern is not resolved. The report continues to present this benefit category in Appendix B and it is not clear what PGM documentation the above District response refers to for clarification.

District Response (24 Mar 06): Pump Station benefit category titled Economic Consequence Benefits has been deleted in the Final Report, and total benefits, net benefits and BCRs are adjusted accordingly in the Final Report.

HQ Analysis: The concern is resolved.

b. Federal Discount Rate and Price Level. In most places, the report states that costs are based on September 2004 prices and a Federal discount rate of 5-3/8%. However, the text on page 44 states that costs are based on October 2004 prices; and page B-17 shows the discount rate to be 5-5/8%. It appears that costs were frequently amortized at 5-5/8% (see page B-24). But the apparent amortization factor comparing the report numbers on page ES-13 (total project first costs plus IDC versus the average annual construction costs), doesn't match either of these two discount rates. The annual costs appear to be overstated. The district should revise the report to show a consistent discount rate and price level for all economic calculations in accordance with paragraph D-3.d.(2) of ER 1105-2-100 and Economic Guidance Memorandum #05-04. The report should provide

more details so the reader can easily understand how annual costs were calculated. Correct the annual costs using the appropriate amortization factor.

District Response (5 Aug 05): In accordance with guidelines the federal discount rate of 5-3/8% and price level of October 2004 are used throughout the final report.

HQ Assessment: This concern is resolved by the text changes noted in the response.

c. Section 10.0 Recommendations. The Recommendations section is missing the standard disclaimer clause in accordance with paragraph G-9.k., ER 1105-2-100. The text should include language similar to the following:

The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to Congress as proposals for authorization and implementation funding. However, prior to transmittal to Congress, the sponsor, the States, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

District Response (5 Aug 05): The standard disclaimer has been added to Section 10 of the main report.

HQ Assessment: This concern is resolved by the text change noted in the response.

d. Economic Tables. The economic tables in Appendix B have some anomalies that should be reviewed and revised or explained as needed.

(1) **Table 10.** Table 10 shows costs of \$111,700 for the East Alton #1 Pump Station and the benefits, net benefits, and BCR are shown as n/a. However, the adjacent columns show values for the probable net benefits.

(2) **Table 17.** Table 17 shows the East-West Fork to have benefits and net benefits of \$1,220,000 with zero costs.

District Response (5 Aug 05): The discrepancies have been corrected. For Table 17, reference text is found in section 5.02a.(1)(c) of the Engineering Appendix. Discrepancy has been corrected. Although PUP tables in report reflect positive PUP numbers for the East-West Fork under the Relief Well Component, no economic analysis was done in the final report for the East-West Fork under the Relief Well Component. Therefore, no benefits or costs are shown.

HQ Assessment: This concern is resolved by the text changes to Tables 10 and 18 as noted in the response.

e. Problems and Opportunities. The discussions on page ES-4 should include an affirmative statement that the sponsors have complied with the O&M requirements as originally described to them.

District Response (5 Aug 05): The report summary states the sponsor has complied with O&M requirements.

HQ Assessment: This concern is resolved by the text changes included in the report summary as noted in the response.

f. Items of Local Cooperation.

(1) **Item o.** Local cooperation item o. appears to be related to recreational features. It is not clear whether recreation is an authorized project purpose, if minimal recreation facilities have been added to the completed project, or if this item relates to recreational facilities provided by others, which must be accommodated by the Federal project in order to provide reasonable access to the river for recreation. The Environmental Assessment indicates that there is a trail system following the top of the levee. The text should clarify the basis for this item of local cooperation.

District Response (5 Aug 05): Item o. regarding recreation has been deleted from section 10 of the main report.

HQ Assessment: This concern is resolved by the elimination of the former item o. regarding recreation as noted in the response.

g. Planning Objectives and Constraints. The text on page 27 indicates the Planning Guidance Memorandum restricted the focus of this study to reconstruction since new authorization was not being sought. The report should clarify that subsequent to the 1999 Planning Guidance Memorandum the Corps determined that additional authority is necessary to reconstruct the project. Policy guidance on reconstruction is being revised accordingly.

District Response (5 Aug 05): Section 5.4 has been clarified per the comment.

HQ Assessment: This concern is resolved by the text changes noted in the response.

h. Project Deficiency. The report uses the term project deficiency in several locations and it is not clear if this term is intended to mean something other than a design deficiency. For instance, ES-11 provides that "[r]elief well redevelopment requirements were not provided to the local sponsor, therefore, current performance problems should be addressed as a project deficiency." It is not clear whether that would be characterized

as an OMRR&R deficiencies, design/construction deficiencies, or reconstruction. ER 1165-2-119 uses the term “project deficiencies” in discussing projects at which corrective measures may be undertaken because the original project was inherently deficient due to design and construction deficiencies. However, it also uses the term generically to describe project deficiencies that are ineligible for correction without additional authority (changed conditions, lack of OMRR&R, contemporary criteria, etc.). Given the wide range of meaning it is recommended that the text should be revised to replace the term “project deficiency” with a more specific description where it is intended.

District Response (5 Aug 05): References to “project deficiency” have been removed.

HQ Assessment: This concern is resolved by the text changes noted in the response.

i. Design Deficiency. The report indicates on pages 23 and 26 that the Wood River project was an example of the "best engineering design thinking of the time." It is not clear how this is then a design deficiency. Corps regulations provide that design deficiencies are not just the result of better technology or engineering techniques that have improved modern engineering standards over time. Design and construction deficiencies are flaws that significantly interfere with the project's purposes or usefulness as intended by Congress. Further clarification would be helpful to explain how design deficiencies can occur despite using the best engineering design thinking of the time. [It is suggested that the text discuss briefly the design process. This includes characterizing the design physical conditions by obtaining representative samples of physical data from field investigations like subsurface exploration. The design theories are then applied, which include factors of safety to account for uncertainties and contingencies in the design conditions and the inability to accurately predict engineering performance. Design deficiencies might result from a number of factors such as insufficient testing to adequately define conditions, limited engineering and scientific knowledge, design and calculation errors, or the inability to model or predict accurately actual conditions (forces, effects, etc). Despite the best available thinking the project doesn't function as intended by the designers.]

District Response (5 Aug 05): Details of the original design process are described in paragraph 5.01c of the Engineering Appendix. Deficiencies in the original design are discussed in paragraph 5.01d, which has been added to Appendix A.

HQ Assessment: This concern is resolved by the text changes noted in the response.

j. Age of Existing Relief Wells (6 May 2005): Further concern was raised about the age of the existing wood-stave relief wells and their ability to remain within design requirements after rehabbing and pumping and the costs associated over the project life of periodic replacements. As such, the district should perform a detailed life-cycle cost analysis on installing a totally new well system versus the expense of testing all the existing wells, rehabbing those that warrant it and replacing those that need replacing. If

a new well system is justified then the associated interior drainage analysis should be performed to assure the redesigned system can satisfy the interior drainage requirements.

District Response (5 Aug 05): Life-cycle cost information for the relief wells is included in Section 5 of the Engineering Appendix. Information addressing the interior drainage requirements has been added to Section 5.05 of the Engineering Appendix.

HQ Assessment: This concern is resolved by the text changes noted in the response.

k. Editorial. The first sentence of section 5.3.2.1 is not a complete sentence and should be revised to say “The Wood River Levee seepage control system...”

District Response (5 Aug 05): Text in 5.3.2.1. has been revised per the comment.

HQ Assessment: This concern is resolved by the text change noted in the response.

6. COMMENTS - NEW POLICY COMPLIANCE REVIEW COMMENTS – No comments were identified that need to be resolved prior to releasing the final report for State and Agency Review. The following comments should be addressed prior to signing the Chief’s Report:

a. REP. The non-Federal sponsor should also notify non-federal sponsor that ER 405-1-12, paragraph 12-38(b) prohibits the non-federal sponsor from receiving credit for the value of LER, including incidental costs, to the extent that they were provided using Federal funds unless the Federal granting agency verifies in writing that such credit is expressly authorized by statute. The land owned by the WDL D was purchased for completion of the Flood Protection Project in the 1940’s. If any federal money was used to purchase land, paragraph 13-28(b) of ER 405-1-12 applies.

District Response (24 Mar 06): The Sponsor has been notified that they are prohibited from receiving credit for the value of LER to the extent that they were provided using federal funds unless the federal granting agency verifies in writing that such credit is expressly authorized by statute.

HQ Assessment: The concern is resolved.

b. Financing Plan. A preliminary financing plan should be included in the final LRR. The sponsor should, at a minimum, identify options for raising necessary funds. Please refer to ER 1105-2-100, Section D-5.

District Response (24 Mar 06): The sponsor is actively investigating methods of financing their portion of the project costs. A letter of support from the sponsor which identifies possible options for raising necessary funds and a preliminary assessment of the project sponsor's financial capability has been included in the GRR.

HQ Analysis: The concern is resolved.
